

## **WHAT IS CLAIMED IS:**

1. A continuously variable power split transmission system for use with a first motor power supply and a second motor power supply, the system comprising:

a planetary gear set comprising a sun gear, a ring gear, a plurality of planet gears and a planet carrier;

a sun shaft linked to said sun gear and operatively connected to said first motorpower supply;

an output shaft operatively connected to said planet carrier;

a countershaft operatively connected to said ring gear through a first clutch, said countershaft and said ring gear rotating in the same direction when connected, said countershaft being also operatively connected to said second motor power supply, and said countershaft being also operatively connected to said sun shaft through a speed variator so that said countershaft and said sun shaft rotate in the same direction;

whereby power input applied by said first motor power supply to said sun shaft is split into two streams merging on said output shaft through said planet carrier, one stream passing through said speed variator, countershaft and ring gear, the other stream passing directly through said sun gear, and power input applied by said second motor power supply to said countershaft adding power to said output shaft while reducing the power flow required to pass through said speed variator.

2. A continuously variable power split transmission system according to claim 1, wherein said output shaft is operatively connected to said planet carrier through the input shaft of a step-up gear box by meshing of a main ratio gear set, whereby said gear box extends the overall transmission range of said system.

3. A continuously variable power split transmission system according to claim 1, wherein said first motor power supply is provided by a combustion engine and said second motor power supply is provided by an electric motor.

4. A continuously variable power split transmission system according to claim 3, wherein said combustion engine provides an optimal torque with respect to a rotation speed thereof such as to function at an optimum efficiency and said electric motor provides an additional torque needed during acceleration.

5. A continuously variable power split transmission system according to claim 1, wherein said first clutch is mounted to said countershaft and connects said countershaft

to said ring gear through a first control gear fixed on said clutch and freely mounted on said countershaft, a second control gear coupled to said ring gear, and a chain operatively connecting said first and second control gears.

6. A continuously variable power split transmission system according to claim 1, wherein said sun shaft is coaxially journaled within said planet carrier, said sun shaft being operatively connected to said first power supply through a motor shaft.

7. A continuously variable power split transmission system according to claim 2, wherein said sun shaft is coaxially journaled within said planet carrier, said sun shaft being operatively connected to said first power supply through a motor shaft extending through said input shaft of said gearbox.

8. A continuously variable power split transmission system according to claim 1, wherein said speed variator comprises a pair of pulleys respectively mounted onto said sun shaft and said countershaft in such a manner as to extend in the same plane, each of said pulleys having a fixed sheave and a movable sheave with means for adjusting a distance between said fixed and movable sheave, and an endless V-belt mounted onto said pulleys.

9. A continuously variable power split transmission system according to claim 2, wherein said main gear ratio set comprises a first gear fixed on said output shaft and a second gear connected to a differential housing.

10. A continuously variable power split transmission system according to claim 1, wherein said countershaft is operatively connected to said second motor power supply through a second clutch.